

**Design Package #9 – Starships  
VOLUME 4 of 7  
Design Analysis for  
Buildings 5422, 5482 & 5500  
Plumbing**

FOR

**QUAD DFAC AND STARSHIP RENOVATIONS PROJECT  
Ft. Jackson- Columbia, South Carolina**

DEVELOPED BY

**Balfour Beatty**  
Construction

Woolpert · KZF  
JOINT VENTURE



**Contract Number: W91236-C-005803**

**Date of Issuance: July 6, 2011**

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TAB 1 – Narrative

### **Design Standards and Codes –**

International Plumbing Code (IPC)

ANSI (ANSI A117.11)

ADA/ABA Criteria

UFAS. System design and installation will conform to the energy and water conservation criteria: Title 10 CFR Part 434, with no faucet exceeding 2.0 GPM.

**Domestic hot water** - The system, **known as SUN Equinox (described below)**, uses a vacuum tube array type solar panel and would provide at least the 30% requirement for savings. The major components, controls and tanks would be easily accessible in the mechanical space, and the *solar collectors would be located on the south facing sloped roof*. This system includes *instantaneous gas fired supplemental boilers* that will meet *100% of the hot water load* when solar heating is not available.

The SUN Equinox solar water heating system was developed by Solar Usage Now, of Harlan Indiana, and Rotex Australia. We have selected SUN Equinox for its *ease of maintenance, simplicity of design, efficiency and positive life cycle cost* characteristics. The system features the Rotex Sanicube storage system along with the Apricus Evacuated Tube Solar Panel and the Nortiz condensing tankless gas water heater providing 100% backup capability. The Rotex Sanicube storage tanks are 100% polypropylene shell with a 3.15 inch bonded rigid PU foam insulation core. The heat exchanger coils within the tanks are stainless steel. These elements make the storage tanks virtually maintenance free, light weight and modular. The storage tanks hold 130 gallons of plain water for thermal storage media at atmospheric pressure, so no chemical treatment is necessary and the system is not pressurized. Grundfos pumps (commercial off-the-shelf equipment, familiar to maintainers) circulate the water from the tank to either the solar pack or the heater. Because this circulation is a closed loop the water in the system quickly becomes chemically neutral eliminating any chance of mineral build up in the coils or solar panels. This build up is the major cause of maintenance problems in traditional boiler systems, and is eliminated with the SUN Equinox system. The domestic hot water runs through the heat exchanger coil in the storage tanks to pick up the stored heat; it never runs through the solar panels. All piping between the tanks, panels and water heaters is copper wrapped in thermal insulation.

The Apricus solar panels are *extremely reliable and simple*, composed of twin glass walled evacuated tubes with closed copper heat pipes which move heat from the tubes to a water filled copper header enclosed in an insulated aluminum box. This assembly is set in a stainless steel frame and mounting bracket to eliminate corrosion. The copper heat pipes contain only a small amount of distilled water under vacuum. Solar energy quickly converts the water to steam which transfers its heat to the water in the copper header through conduction. This design produces a light weight, durable and maintenance free system with a comprehensive 10 year manufacturer's warranty. The glass tubes are capable of withstanding the impact of hail up to 1" in diameter. If any individual tube does break the rest of the system will continue to operate. Since the individual tubes "plug in" to the header and are held into the panel with stainless clips, broken tubes can easily be removed and replaced without taking the system out of service. A broken tube causes no loss of water or immediate need for repairs, only reduced system efficiency.

Due to seasonal variation in the solar energy there may be times when supplemental heating is required. The Nortiz heaters are widely used, simple, low maintenance units familiar to maintenance personnel which will automatically provide all reserve capacity required to meet hot water demand. This system is extremely robust, covered by a 3 year warrantee, and made of local equipment components (thermostat, pumps, gas heater) which are all familiar maintenance personnel.

Where hot water piping runs are of sufficient length to hamper hot water from readily being available, a low wattage, hot water temperature maintenance cable system shall be incorporated into the design while still meeting energy conservation concerns.

**Restrooms/Showers** – Public and general use toilet room water closets shall be wall-hung, elongated bowl, siphon jet, open-front seat, with manual, lever-handle actuator, ultra low flow, 1.28 gpf flush valve. Public and general use toilet room lavatories shall be vitreous china, 20” by 17” oval countertop type and equipped with a manual operation, single lever, water conserving low flow 0.5 gpm faucet. The urinal shall be a wall-hung unit with a manual, ultra-low flow, 0.125 gpf flush valve.

**Sinks/Mop Sinks**—Stainless sinks will be provided in Conference Room with 1.5 gpm water conserving faucets. Janitor’s closets will have floor-mounted, stainless steel mop sinks with 2.0 gpm faucet, hose and hangers/brackets.

**Electric Water Coolers** - Units shall be dual-height, electric refrigerated type and shall conform to the requirements of UFAS, ARI 1010 and the Lead Contamination Control Act of 1988.

**Piping** - Under slab domestic water piping and fittings shall be copper tubing, type K, annealed. Under slab supply piping shall be limited to service entrance only. Interior water piping shall be type L hard-drawn copper with wrought copper soldered fittings, thereby reducing potential maintenance and prolonging system life. The sanitary sewer and vent piping systems will be a combination of Standard Wt. Cast Iron (used within return air plenums) and schedule 40 PVC, DWV pipe and fittings (above & below grade and vent piping). Floor drains with trap primer connections, floor cleanouts and wall cleanouts shall be installed per code and for ease of maintenance. All interior copper piping shall be insulated with a minimum of ¾” pipe insulation for reduction of energy loss and consumption.

**Natural Gas Distribution Systems** - The design and installation of natural gas distribution systems and equipment shall be in conformance with manufacturer’s recommendations and applicable sections of ASME B31.8 and AGA-01. The installation of interior natural gas distribution systems shall be in conformance with the provisions of NFPA 54 and AGA-01.

## TAB 2 - Calculations



## PLUMBING CALCULATIONS

### Woolpert, Inc.

#### PLUMBING LOADS RECAP SHEET

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5422  
 PROJECT NO.: 70229  
 LAST UPDATE: 1/28/2011  
 BY: MFB

#### THRID FLOOR

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	2	0.25	0	2	1	0.5	0	4	2
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	0	20
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	0
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	2	0	0	0	0
SINK- BAR/COMMERCIAL(LAV)	1-1/4	5	1.5	1.5	2	2	7.5	7.5	10	10
SINK-COMMERCIAL (LAB)	1-1/2	1	3	3	4	2	3	3	4	2
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	6
SHOWER (Public)	3	3	3	3	4	2	9	9	12	6
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	1	5	0	5	2	5	0	5	2
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
*WATER CLOSET- FLUSH VALVE	3	6	10	0	10	6	60	0	60	36
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	0

#### TOTAL LOADS ON WATER AND SANITARY SYSTEMS

TOTALS **23**

FU LOADS: **87.25** **21.75** **98** **84**  
x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	40	15	43	Flush Tank
	64	-	67	Flush Valve

## PLUMBING CALCULATIONS

**Sanitary Calculations for 5422 Area B - Left**

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5422  
 PROJECT NO.: 70229  
 LAST UPDATE: **1/28/2011**  
 BY: MFB

**ALL FLOOR TOTALS**

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	0	0.25	0	2	1	0	0	0	0
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	0	20
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	0
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	2	0	0	0	0
SINK- BAR/COMMERCIAL(LAV)	1-1/4	10	1.5	1.5	2	2	15	15	20	20
SINK-COMMERCIAL (LAB)	1-1/2	0	3	3	4	2	0	0	0	0
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	6
SHOWER (Public)	3	0	3	3	4	2	0	0	0	0
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	0	5	0	5	2	0	0	0	0
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
*WATER CLOSET- FLUSH VALVE	3	14	10	0	10	6	140	0	140	84
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	0

**TOTAL LOADS ON WATER AND SANITARY SYSTEMS**

TOTALS **29**

FU LOADS: **157.25** **17.25** **163** **130**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	56	13	58	Flush Tank
	82	-	83	Flush Valve

## PLUMBING CALCULATIONS

### Woolpert, Inc.

#### PLUMBING LOADS RECAP SHEET

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5422  
 PROJECT NO.: 70229  
 LAST UPDATE: 1/28/2011  
 BY: MFB

#### THRID FLOOR

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	
DRINKING FOUNTAIN	1-1/4	0	0.25	0	2	1	0	0	0	
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	20	
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	
POT SINK	2-1/2	0	3	3	4	2	0	0	0	
SINK- BAR/COMMERCIAL(LAV)	1-1/4	10	1.5	1.5	2	2	15	15	20	
SINK-COMMERCIAL (LAB)	1-1/2	0	3	3	4	2	0	0	0	
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	
SHOWER (Public)	3	0	3	3	4	2	0	0	0	
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	
URINAL- STALL, WASH-OUT	1-1/2	0	5	0	5	2	0	0	0	
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	
WASHING MACHINE	2	0	3	3	4	2	0	0	0	
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	
*WATER CLOSET- FLUSH VALVE	3	14	10	0	10	6	140	0	140	
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	

#### TOTAL LOADS ON WATER AND SANITARY SYSTEMS

TOTALS **29**

FU LOADS: **157.25** **17.25** **163** **130**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	56	13	58	Flush Tank
	82	-	83	Flush Valve

## PLUMBING CALCULATIONS

**Sanitary Calculations for 5482 Area A**

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5482  
 PROJECT NO.: 70229  
 LAST UPDATE: **1/28/2011**  
 BY: MFB

**ALL FLOOR TOTALS**

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	2	0.25	0	2	1	0.5	0	4	2
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	0	20
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	0
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	2	0	0	0	0
SINK- BAR/COMMERCIAL(LAV)	1-1/4	5	1.5	1.5	2	2	7.5	7.5	10	10
SINK-COMMERCIAL (LAB)	1-1/2	1	3	3	4	2	3	3	4	2
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	6
SHOWER (Public)	3	3	3	3	4	2	9	9	12	6
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	1	5	0	5	2	5	0	#N/A	2
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
*WATER CLOSET- FLUSH VALVE	3	6	10	0	10	6	60	0	60	36
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	0

**TOTAL LOADS ON WATER AND SANITARY SYSTEMS**

TOTALS **23**

FU LOADS: **87.25** **21.75** **#N/A** **84**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	40	15	#N/A	Flush Tank
	64	-	#N/A	Flush Valve

## PLUMBING CALCULATIONS

**Sanitary Calculations for 5482 Area B - Left**

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5482  
 PROJECT NO.: 70229  
 LAST UPDATE: **1/28/2011**  
 BY: MFB

**ALL FLOOR TOTALS**

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	
DRINKING FOUNTAIN	1-1/4	0	0.25	0	2	1	0	0	0	
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	20	
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	
POT SINK	2-1/2	0	3	3	4	2	0	0	0	
SINK- BAR/COMMERCIAL(LAV)	1-1/4	10	1.5	1.5	2	2	15	15	20	
SINK-COMMERCIAL (LAB)	1-1/2	0	3	3	4	2	0	0	0	
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	
SHOWER (Public)	3	0	3	3	4	2	0	0	0	
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	
URINAL- STALL, WASH-OUT	1-1/2	0	5	0	5	2	0	0	0	
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	
WASHING MACHINE	2	0	3	3	4	2	0	0	0	
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	
*WATER CLOSET- FLUSH VALVE	3	14	10	0	10	6	140	0	140	
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	

**TOTAL LOADS ON WATER AND SANITARY SYSTEMS**

TOTALS **29**

FU LOADS: **157.25** **17.25** **163** **130**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	56	13	58	Flush Tank
	82	-	83	Flush Valve

## PLUMBING CALCULATIONS

**Sanitary Calculations for 5482 Area B - Right**

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5482  
 PROJECT NO.: 70229  
 LAST UPDATE: **1/28/2011**  
 BY: MFB

**ALL FLOOR TOTALS**

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	
DRINKING FOUNTAIN	1-1/4	0	0.25	0	2	1	0	0	0	
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	20	
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	
POT SINK	2-1/2	0	3	3	4	2	0	0	0	
SINK- BAR/COMMERCIAL(LAV)	1-1/4	10	1.5	1.5	2	2	15	15	20	
SINK-COMMERCIAL (LAB)	1-1/2	0	3	3	4	2	0	0	0	
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	
SHOWER (Public)	3	0	3	3	4	2	0	0	0	
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	
URINAL- STALL, WASH-OUT	1-1/2	0	5	0	5	2	0	0	0	
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	
WASHING MACHINE	2	0	3	3	4	2	0	0	0	
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	
*WATER CLOSET- FLUSH VALVE	3	14	10	0	10	6	140	0	140	
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	

**TOTAL LOADS ON WATER AND SANITARY SYSTEMS**

TOTALS **29**

FU LOADS: **157.25** **17.25** **163** **130**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	56	13	58	Flush Tank
	82	-	83	Flush Valve

## PLUMBING CALCULATIONS

**Sanitary Calculations for 5500 Area A**

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5500  
 PROJECT NO.: 70229  
 LAST UPDATE: **1/28/2011**  
 BY: MFB

**ALL FLOOR TOTALS**

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	
DRINKING FOUNTAIN	1-1/4	2	0.25	0	2	1	0.5	0	4	
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	20	
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	
POT SINK	2-1/2	0	3	3	4	2	0	0	0	
SINK- BAR/COMMERCIAL(LAV)	1-1/4	5	1.5	1.5	2	2	7.5	7.5	10	
SINK-COMMERCIAL (LAB)	1-1/2	1	3	3	4	2	3	3	4	
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	
SHOWER (Public)	3	3	3	3	4	2	9	9	12	
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	
URINAL- STALL, WASH-OUT	1-1/2	1	5	0	5	2	5	0	#N/A	
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	
WASHING MACHINE	2	0	3	3	4	2	0	0	0	
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	
*WATER CLOSET- FLUSH VALVE	3	6	10	0	10	6	60	0	60	
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	

TOTAL LOADS ON WATER AND SANITARY SYSTEMS

TOTALS **23**

FU LOADS: **87.25** **21.75** **#N/A** **84**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	40	15	#N/A	Flush Tank
	64	-	#N/A	Flush Valve

## PLUMBING CALCULATIONS

**Sanitary Calculations for 5500 Area B - Left**

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5500  
 PROJECT NO.: 70229  
 LAST UPDATE: **1/28/2011**  
 BY: MFB

**ALL FLOOR TOTALS**

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	0	0.25	0	2	1	0	0	0	0
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	0	20
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	0
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	2	0	0	0	0
SINK- BAR/COMMERCIAL(LAV)	1-1/4	10	1.5	1.5	2	2	15	15	20	20
SINK-COMMERCIAL (LAB)	1-1/2	0	3	3	4	2	0	0	0	0
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	6
SHOWER (Public)	3	0	3	3	4	2	0	0	0	0
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	0	5	0	5	2	0	0	0	0
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
*WATER CLOSET- FLUSH VALVE	3	14	10	0	10	6	140	0	140	84
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	0

**TOTAL LOADS ON WATER AND SANITARY SYSTEMS**

TOTALS **29**

FU LOADS: **157.25** **17.25** **163** **130**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	56	13	58	Flush Tank
	82	-	83	Flush Valve

## PLUMBING CALCULATIONS

**Sanitary Calculations for 5500 Area B - Right**

International Plumbing Code

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

CLIENT: Ft Jackson  
 PROJECT: Bldg 5500  
 PROJECT NO.: 70229  
 LAST UPDATE: **1/28/2011**  
 BY: MFB

**ALL FLOOR TOTALS**

DESCRIPTION	TRAP SIZE INCHES	QTY	WATER LOADS			SANITARY FIXTURE LOAD FU	TOTAL WATER LOAD COLD	TOTAL WATER LOAD HOT	TOTAL WATER SERVICE LOAD	TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU					
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	0	0.25	0	2	1	0	0	0	0
FLOOR DRAIN( Small)	3	4	0	0	0	5	0	0	0	20
FLOOR DRAIN-FLR SINK(Large)	4	0	0	0	0	6	0	0	0	0
RESID. KITCHEN - LAUNDRY SK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	2	0	0	0	0
SINK- BAR/COMMERCIAL(LAV)	1-1/4	10	1.5	1.5	2	2	15	15	20	20
SINK-COMMERCIAL (LAB)	1-1/2	0	3	3	4	2	0	0	0	0
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	1	2.25	2.25	3	6	2.25	2.25	3	6
SHOWER (Public)	3	0	3	3	4	2	0	0	0	0
*URINAL- SIPHON JET	2	0	20	0	20	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	0	5	0	5	2	0	0	0	0
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
DISHWASHER (Private)	2	0	0	0	1.4	1.4	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
*WATER CLOSET- FLUSH VALVE	3	14	10	0	10	6	140	0	140	84
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
HOSE BIBBS- WALL HYDRANT	-	0	3	0	3	0	0	0	0	0

**TOTAL LOADS ON WATER AND SANITARY SYSTEMS**

TOTALS **29**

FU LOADS: **157.25** **17.25** **163** **130**  
 x"Service x"San

\*See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS IN GALLONS PER MINUTE	56	13	58	Flush Tank
	82	-	83	Flush Valve

# PLUMBING CALCULATIONS

**Domestic Water Calculations for 5422**

International Plumbing Code

CLIENT: Ft jackson  
 PROJECT: Bldg 5422  
 PROJECT NO.: 70229  
 LAST UPDATE: 1/28/2011  
 BY: MFB

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

**ALL FLOOR TOTALS**

FIXTURE DESCRIPTION	TRAP SIZE (INCHES)	QTY	WATER SUPPLY LOAD			SANITARY FIXTURE LOAD FU	WATER SUPPLY FU TOTALS			TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU		WATER LOAD COLD	WATER LOAD HOT	WATER SERVICE LOAD	
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	2	0.25	0	2	1	0.5	0	4	2
FLOOR DRAIN (Small)	3	12	0	0	0	5	0	0	0	60
FLOOR DRAIN/FLR SINK (Large)	4	0	0	0	0	6	0	0	0	0
RES.KITCHEN or LAUNDRY SINK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	4	0	0	0	0
SINK- BAR/COMMERCIAL (LAV)	1-1/4	25	1.5	1.5	2	2	37.5	37.5	50	50
SINK-COMMERCIAL	1-1/2	1	3	3	4	2	3	3	4	2
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	3	2.25	2.25	3	5	6.75	6.75	9	15
SHOWER (Public)	3	3	3	3	4	2	9	9	12	6
* URINAL- SIPHON JET	2	0	10	0	5	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	1	5	0	5	2	20	0	20	2
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
URINAL- TROUGH	2	0	3	0	3	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
* WATER CLOSET- FLUSH VALVE	3	34	10	0	10	6	405	0	405	204
DISHWASHER (PRIVATE)	2	0	0	1.4	1.4	2	0	0	0	0
HOSE BIBBS - WALL HYDRANT	-	0	3	0	3	0	0	0	0	0
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
PROCESS WATER SUPPLY	-	0	40	0	40	0	0	0	0	0

TOTAL LOADS ON WATER AND SANITARY SYSTEMS

TOTALS	<b>81</b>	Fixtures
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FU LOADS:	<b>481.75</b>	<b>56.25</b>	<b>504</b>	<b>341</b>
			x"Service	x"San

\* See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS	<b>121</b>	<b>31</b>	<b>125</b>	Flush Tank
IN GALLONS PER MINUTE	<b>139</b>	-	<b>142</b>	Flush Valve

# PLUMBING CALCULATIONS

**Domestic Water Calculations for 5482**

International Plumbing Code

CLIENT: Ft Jackson  
 PROJECT: Bldg 5482  
 PROJECT NO.: 70229  
 LAST UPDATE: 1/28/2011  
 BY: MFB

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

**ALL FLOOR TOTALS**

FIXTURE DESCRIPTION	TRAP SIZE (INCHES)	QTY	WATER SUPPLY LOAD			SANITARY FIXTURE LOAD FU	WATER SUPPLY FU TOTALS			TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU		WATER LOAD COLD	WATER LOAD HOT	WATER SERVICE LOAD	
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	2	0.25	0	2	1	0.5	0	4	2
FLOOR DRAIN (Small)	3	12	0	0	0	5	0	0	0	60
FLOOR DRAIN/FLR SINK (Large)	4	0	0	0	0	6	0	0	0	0
RES.KITCHEN or LAUNDRY SINK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	4	0	0	0	0
SINK- BAR/COMMERCIAL (LAV)	1-1/4	25	1.5	1.5	2	2	37.5	37.5	50	50
SINK-COMMERCIAL	1-1/2	1	3	3	4	2	3	3	4	2
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	3	2.25	2.25	3	5	6.75	6.75	9	15
SHOWER (Public)	3	3	3	3	4	2	9	9	12	6
* URINAL- SIPHON JET	2	0	10	0	5	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	1	5	0	5	2	20	0	20	2
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
URINAL- TROUGH	2	0	3	0	3	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
* WATER CLOSET- FLUSH VALVE	3	34	10	0	10	6	405	0	405	204
DISHWASHER (PRIVATE)	2	0	0	1.4	1.4	2	0	0	0	0
HOSE BIBBS - WALL HYDRANT	-	0	3	0	3	0	0	0	0	0
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
PROCESS WATER SUPPLY	-	0	40	0	40	0	0	0	0	0

TOTAL LOADS ON WATER AND SANITARY SYSTEMS

TOTALS	<b>81</b>	Fixtures
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FU LOADS:	<b>481.75</b>	<b>56.25</b>	<b>504</b>	<b>341</b>
			x"Service	x"San

\* See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS	<b>121</b>	<b>31</b>	<b>125</b>	Flush Tank
IN GALLONS PER MINUTE	<b>139</b>	-	<b>142</b>	Flush Valve

# PLUMBING CALCULATIONS

**Domestic Water Calculations for 5500**

International Plumbing Code

CLIENT: Ft Jackson  
 PROJECT: Bldg 5500  
 PROJECT NO.: 70229  
 LAST UPDATE: 1/28/2011  
 BY: MFB

PLUMBING SYSTEM LOADS & FIXTURE QUANTITIES

**ALL FLOOR TOTALS**

FIXTURE DESCRIPTION	TRAP SIZE (INCHES)	QTY	WATER SUPPLY LOAD			SANITARY FIXTURE LOAD FU	WATER SUPPLY FU TOTALS			TOTAL SANITARY LOAD DFU
			COLD WATER FU	HOT WATER FU	AVG. SERVICE WSFU		WATER LOAD COLD	WATER LOAD HOT	WATER SERVICE LOAD	
SHOWER (PRIVATE)	2	0	1	1	1.4	2	0	0	0	0
BATHTUB	1-1/2	0	3	3	4	2	0	0	0	0
CUP SINK	1-1/4	0	0.75	0.75	1	1	0	0	0	0
DRINKING FOUNTAIN	1-1/4	2	0.25	0	2	1	0.5	0	4	2
FLOOR DRAIN (Small)	3	12	0	0	0	5	0	0	0	60
FLOOR DRAIN/FLR SINK (Large)	4	0	0	0	0	6	0	0	0	0
RES.KITCHEN or LAUNDRY SINK	1-1/2	0	1	1	1.4	2	0	0	0	0
POT SINK	2-1/2	0	3	3	4	4	0	0	0	0
SINK- BAR/COMMERCIAL (LAV)	1-1/4	25	1.5	1.5	2	2	37.5	37.5	50	50
SINK-COMMERCIAL	1-1/2	1	3	3	4	2	3	3	4	2
SINK- PRIVATE (LAV)	1-1/4	0	0.5	0.5	0.7	1	0	0	0	0
SINK- SERVICE TYPE	2	0	2.25	2.25	3	3	0	0	0	0
JANITOR SINK	3	3	2.25	2.25	3	5	6.75	6.75	9	15
SHOWER (Public)	3	3	3	3	4	2	9	9	12	6
* URINAL- SIPHON JET	2	0	10	0	5	2	0	0	0	0
URINAL- STALL, WASH-OUT	1-1/2	1	5	0	5	2	20	0	20	2
URINAL- WALL LIP	2	0	3	0	5	2	0	0	0	0
URINAL- TROUGH	2	0	3	0	3	2	0	0	0	0
WASHING MACHINE	2	0	3	3	4	2	0	0	0	0
WATER CLOSET- TANK TYPE	3	0	2.2	0	2.2	4	0	0	0	0
* WATER CLOSET- FLUSH VALVE	3	34	10	0	10	6	405	0	405	204
DISHWASHER (PRIVATE)	2	0	0	1.4	1.4	2	0	0	0	0
HOSE BIBBS - WALL HYDRANT	-	0	3	0	3	0	0	0	0	0
MISC. FAUCET	-	0	3	3	4	0	0	0	0	0
EMERGENCY EYE WASH	-	0	10	0	3	0	0	0	0	0
PROCESS WATER SUPPLY	-	0	40	0	40	0	0	0	0	0

TOTAL LOADS ON WATER AND SANITARY SYSTEMS	
TOTALS	<b>81</b> Fixtures

FU LOADS:	<b>481.75</b>	<b>56.25</b>	<b>504</b>	<b>341</b>
			x"Service	x"San

\* See TABLE 1 For Fixture Unit Values

WATER REQUIREMENTS	<b>121</b>	<b>31</b>	<b>125</b>	Flush Tank
IN GALLONS PER MINUTE	<b>139</b>	<b>-</b>	<b>142</b>	Flush Valve

# Service Water Heating Compliance Documentation

Project Name: Ft Jackson Bldg 5422	
Project Address:	Date:
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

### Mandatory Provisions Checklist

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Load calculations have been provided for sizing of systems and equipment (§ 7.4.1).</li> <li><input type="checkbox"/> Equipment efficiencies meet or exceed the requirements of Table 7.8 (§ 7.4.2).</li> <li><input type="checkbox"/> Circulating systems are fully insulated (per Table 6.8.3) and have automatic pump controls (§ 7.4.3 and § 7.4.4.2).</li> <li><input checked="" type="checkbox"/> Non-circulating systems have insulated heat traps and outlet piping insulated (per Table 6.8.3) for 8 ft from the storage tank (§ 7.4.6).</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Tanks with remote heaters have circulation pump controls (§ 7.4.4.4).</li> <li><input checked="" type="checkbox"/> All water-heating systems have temperature controls that are adjustable down to 120°F or lower (§ 7.4.4.1).</li> <li><input checked="" type="checkbox"/> Systems designed with pipe heating systems such as heat trace have temperature or time controls (§ 7.4.4.2).</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Public lavatories have outlet temperature controls that limit the discharge temperature to 110°F (§ 7.4.4.3).</li> <li><input type="checkbox"/> Pool heaters have readily accessible controls and gas-fired heaters do not have standing pilot lights (§ 7.4.5.1).</li> <li><input type="checkbox"/> Heated swimming pools have vapor retardant covers (§ 7.4.5.2).</li> <li><input type="checkbox"/> Pool heaters and circulation pumps have time switches (§ 7.4.5.3).</li> </ul> |
|---|---|--|

### Equipment Efficiency Worksheet (§ 7.4.1)

System Tag	Equipment Type (From Table 7.8)	Sub-Category or Rating Condition (From Table 7.8)	Input Rating (Btu/h or kW)	Volume (gal)	Energy Factor or Et		Standby Loss	
					Rated	≥ Required	Rated	≥ Required
Water Heater	Gas Storage Water Heater	≤4,000(BTU/h)/g	76,000 BTU/h	50 gallons	96%	≥ 80%	364 BTU/h	≥ 670 BTU/h
		—				≥		≥
						≥		≥
						≥		≥

### Combination Space and Water Heating Worksheet (§ 7.5.1)

System Tag	Standby Loss Method		or Energy Use Exception (attach calculations)		or Size Exception	
	Equipment	≥ Requirement	Equipment	≥ Requirement	Equipment	≥ Requirement
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h



# Service Water Heating Compliance Documentation

Project Name: Ft Jackson Bldg 5482	
Project Address:	Date:
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

### Mandatory Provisions Checklist

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Load calculations have been provided for sizing of systems and equipment (§ 7.4.1).</li> <li><input type="checkbox"/> Equipment efficiencies meet or exceed the requirements of Table 7.8 (§ 7.4.2).</li> <li><input type="checkbox"/> Circulating systems are fully insulated (per Table 6.8.3) and have automatic pump controls (§ 7.4.3 and § 7.4.4.2).</li> <li><input checked="" type="checkbox"/> Non-circulating systems have insulated heat traps and outlet piping insulated (per Table 6.8.3) for 8 ft from the storage tank (§ 7.4.6).</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Tanks with remote heaters have circulation pump controls (§ 7.4.4.4).</li> <li><input checked="" type="checkbox"/> All water-heating systems have temperature controls that are adjustable down to 120°F or lower (§ 7.4.4.1).</li> <li><input checked="" type="checkbox"/> Systems designed with pipe heating systems such as heat trace have temperature or time controls (§ 7.4.4.2).</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Public lavatories have outlet temperature controls that limit the discharge temperature to 110°F (§ 7.4.4.3).</li> <li><input type="checkbox"/> Pool heaters have readily accessible controls and gas-fired heaters do not have standing pilot lights (§ 7.4.5.1).</li> <li><input type="checkbox"/> Heated swimming pools have vapor retardant covers (§ 7.4.5.2).</li> <li><input type="checkbox"/> Pool heaters and circulation pumps have time switches (§ 7.4.5.3).</li> </ul> |
|---|---|--|

### Equipment Efficiency Worksheet (§ 7.4.1)

System Tag	Equipment Type (From Table 7.8)	Sub-Category or Rating Condition (From Table 7.8)	Input Rating (Btu/h or kW)	Volume (gal)	Energy Factor or Et		Standby Loss	
					Rated	≥ Required	Rated	≥ Required
Water Heater	Gas Storage Water Heater	≤4,000(BTU/h)/g	76,000 BTU/h	50 gallons	96%	≥ 80%	364 BTU/h	≥ 670 BTU/h
		—				≥		≥
						≥		≥
						≥		≥

### Combination Space and Water Heating Worksheet (§ 7.5.1)

System Tag	Standby Loss Method		or Energy Use Exception (attach calculations)		or Size Exception	
	Equipment	≥ Requirement	Equipment	≥ Requirement	Equipment	≥ Requirement
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h



# Service Water Heating Compliance Documentation

Project Name: Ft Jackson Bldg 5500	
Project Address:	Date:
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

### Mandatory Provisions Checklist

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Load calculations have been provided for sizing of systems and equipment (§ 7.4.1).</li> <li><input type="checkbox"/> Equipment efficiencies meet or exceed the requirements of Table 7.8 (§ 7.4.2).</li> <li><input type="checkbox"/> Circulating systems are fully insulated (per Table 6.8.3) and have automatic pump controls (§ 7.4.3 and § 7.4.4.2).</li> <li><input checked="" type="checkbox"/> Non-circulating systems have insulated heat traps and outlet piping insulated (per Table 6.8.3) for 8 ft from the storage tank (§ 7.4.6).</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Tanks with remote heaters have circulation pump controls (§ 7.4.4.4).</li> <li><input checked="" type="checkbox"/> All water-heating systems have temperature controls that are adjustable down to 120°F or lower (§ 7.4.4.1).</li> <li><input checked="" type="checkbox"/> Systems designed with pipe heating systems such as heat trace have temperature or time controls (§ 7.4.4.2).</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Public lavatories have outlet temperature controls that limit the discharge temperature to 110°F (§ 7.4.4.3).</li> <li><input type="checkbox"/> Pool heaters have readily accessible controls and gas-fired heaters do not have standing pilot lights (§ 7.4.5.1).</li> <li><input type="checkbox"/> Heated swimming pools have vapor retardant covers (§ 7.4.5.2).</li> <li><input type="checkbox"/> Pool heaters and circulation pumps have time switches (§ 7.4.5.3).</li> </ul> |
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		—				≥		≥
						≥		≥
						≥		≥

### Combination Space and Water Heating Worksheet (§ 7.5.1)

System Tag	Standby Loss Method		or Energy Use Exception (attach calculations)		or Size Exception	
	Equipment	≥ Requirement	Equipment	≥ Requirement	Equipment	≥ Requirement
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h
		≥		≥		≥ 150,000 Btu/h

